

REMARKS

Pursuant to the present amendment, new dependent claims 52-56 have been added. Claims 35-51 have been withdrawn from consideration. Thus, claims 1-34 and 52-56 are currently under consideration in the present application. No new matter has been introduced by way of the present amendment. Reconsideration of the present application is respectfully requested.

In the Office Action, claims 1-34 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Muraka (U.S. Patent No. 5,637,185). Applicants respectfully traverse the Examiner's rejections.

As the Examiner well knows, anticipation requires that an anticipating reference by definition must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. *In re Bond*, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). To the extent the Examiner relies on principles of inherency to find anticipation, inherency requires that the asserted proposition necessarily flow from the disclosure. *In re Oelrich*, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981); *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1463-64 (Bd. Pat. App. & Int. 1990); *Ex parte Skinner*, 2 U.S.P.Q.2d 1788, 1789 (Bd. Pat. App. & Int. 1987); *In re King*, 231 U.S.P.Q. 136, 138 (Fed. Cir. 1986). It is not enough that a reference could have, should have, or would have been used as the claimed invention. "The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Oelrich*, at 326, quoting *Hansgirk v. Kemmer*, 40 U.S.P.Q. 665, 667 (C.C.P.A. 1939); *In re Rijckaert*, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993), quoting *Oelrich*, at 326; see also *Skinner*, at 1789. "Inherency ... may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Skinner*, at 1789, citing *Oelrich*. Where anticipation is found through inherency, the Office's burden of establishing prima facie anticipation includes the burden of providing "...some evidence or scientific reasoning to establish the reasonableness of

the examiner's belief that the functional limitation is an inherent characteristic of the prior art." *Skinner* at 1789.

Among other things, independent claim 1 requires determining a thickness of the layer of metal that is removed during the polishing operation based upon at least the measured concentration of the metal layer material. As conceded by the Examiner, this limitation is not expressly disclosed in Muraka. This is evidenced by the Examiner's reliance on principles of inherency in rejecting claims 1, 11 and 20. Office Action at pp. 3-4. It is respectfully submitted that at least this limitation is not inherently disclosed in Muraka. As understood by the undersigned, Muraka is generally directed to a method of detecting the endpoint of a polishing process. That is, Muraka is not understood to be concerned with determining a thickness of the metal layer removed, but rather with insuring that the endpoint of the polishing process has been reached. Moreover, the Examiner has not provided any reasoning or logical explanation as to how this limitation is inherently disclosed in Muraka. As indicated above, inherency may not be based upon mere possibilities or probabilities. With all due respect, it is submitted that the Examiner has improperly used Applicants' disclosure as a roadmap when reviewing the disclosure of Muraka. Accordingly, it is respectfully submitted that, for at least this reason, independent claims 1, 11 and 20, and all claims dependent therefrom, are not anticipated by Muraka.

Dependent claims 4, 14 and 23 are allowable over the art of record for additional, independent reasons. For example, dependent claim 4 includes the limitation of calculating the thickness of the metal layer removed during the polishing process based upon the measured volume of the polishing slurry used during the polishing operations. In rejecting these claims, the Examiner appears to be relying on suppositions regarding what the disclosure of Muraka can be used for. Respectfully, to find anticipation, the Examiner must provide record support where

the Muraka reference discloses, either expressly or inherently, the claimed limitation. Suppositions regarding what could be done based upon the Muraka disclosure is improper. Thus, with due respect, it is submitted that the Examiner has not provided citation to any portion of the Muraka disclosure where the limitations set forth in dependent claims 4, 14 and 23 are disclosed. As understood by the undersigned, Muraka does not even remotely disclose or suggest the concept of using the measured volume of the polishing slurry to calculate the thickness of the layer of material removed during the polishing process. Accordingly, dependent claims 4, 14 and 23 are not anticipated by Muraka.

Dependent claims 5, 15 and 24 are likewise believed to be independently allowable. These claims include the limitation of calculating the thickness of the metal layer removed by the measured volume of the slurry and the measured concentration of the material of the metal layer in the polishing slurry. These claims are believed to be allowable for some of the reasons set forth above. Moreover, these claims are believed to be allowable because there is simply no disclosure in Muraka for using both the measured slurry volume and the measured concentration to calculate the thickness of the metal layer removed during the polishing process.

Dependent claims 9 and 18 are likewise believed to be allowable for independent reasons. These claims include the limitation that the thickness of the metal layer removed is determined by accessing a model that is comprised of data correlating the measured concentration of the layer of metal in the slurry and the thickness of a layer of material comprised of the same material as the layer of metal. Respectfully, Muraka is not understood to disclose any type of model, much less one that is comprised of the data set forth in dependent claims 9 and 14. To the extent the Examiner maintains this rejection, the undersigned would appreciate a specific citation to Muraka where such a model is disclosed. For at least these reasons, it is respectfully submitted that dependent claims 9 and 18 are not anticipated by Muraka.

Claims 27-29 are likewise not anticipated by Muraka. Among other things, independent claim 27 includes a layer of copper and the limitation of determining the thickness of the layer removed during the polishing process by accessing a model comprised of data correlating the measured concentration of copper and a thickness of a layer of copper. For at least the reasons set forth above, it is respectfully submitted that claims 27-29 are not anticipated by Muraka.

Claims 30-34 are likewise not anticipated by Muraka. Among other things, independent claim 30 includes limitations of measuring a volume of the polishing slurry used during the polishing process, measuring the concentration of the copper in the measured volume of slurry, and calculating a thickness of the layer of metal removed based upon at least the measured volume of the slurry and the measured concentration of copper. Independent claim 30 is believed to be allowable for many of the reasons set forth above.

Pursuant to the present amendment, new dependent claims 52-56 have been added to further define Applicants' invention. These newly added claims recite that the slurry used during the polishing process is provided to a waste slurry reservoir, and that the concentration measurement of the material comprising the metal layer is made from the slurry in the slurry waste reservoir. This limitation is simply not disclosed in Muraka. In Muraka, a measurement electrode 58 is located in the slurry adjacent the wafer being polished. Col. 7, ll. 13-16. At no point does Muraka disclose or suggest providing a waste slurry reservoir and performing the measurements described herein from slurry that is collected in the waste slurry reservoir.

It is respectfully submitted that, as shown above, all pending claims are not anticipated by Muraka. Moreover, it is also submitted that all pending claims are not obvious in view of Muraka or any other art of record. As the Examiner well knows, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); M.P.E.P. § 2142. Moreover, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); M.P.E.P. § 2143.03.

With respect to alleged obviousness, there must be something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561 (Fed. Cir. 1986). In fact, the absence of a suggestion to combine is dispositive in an obviousness determination. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573 (Fed. Cir. 1997). The mere fact that the prior art can be combined or modified does not make the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); M.P.E.P. § 2143.01. The consistent criterion for determining obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art. Both the suggestion and the expectation of success must be founded in the prior art, not in the Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); *In re O'Farrell*, 853 F.2d 894 (Fed. Cir. 1988); M.P.E.P. § 2142.

This is simply no suggestion of the inventions defined by the pending claims in Muraka or any of the other prior art of record, considered individually or collectively. It is respectfully submitted that any attempt to assert that the pending claims are obvious in view of Muraka must necessarily be based upon an improper use of hindsight using Applicants' disclosure as a roadmap. Moreover, as set forth in *In re Lee*, in an obviousness situation, the prior art must disclose each and every element of the claimed invention, and that any motivation to combine or modify the prior art must be based upon a suggestion in the prior art. *In re Lee*, 61 U.S.P.Q.2d 143 (Fed. Cir. 2002). Conclusory statements regarding common knowledge and common sense are insufficient to support a finding of obviousness. *Id.* at 1434-35.

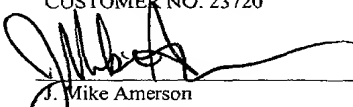
Applying these legal standards, it is respectfully submitted that all pending claims are not obvious in view of the prior art of record.

For the aforementioned reasons, it is respectfully submitted that all pending claims are in condition for allowance. The Examiner is invited to contact the undersigned attorney at (713) 934-4055 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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